

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 60506

MSAS NO. 113

OVER THE

RED RIVER OF THE NORTH

DISTRICT 2 - POLK COUNTY, CITY OF EAST GRAND FORKS



PREPARED FOR THE
MINNESOTA DEPARTMENT OF TRANSPORTATION
BY
COLLINS ENGINEERS, INC.
JOB NO. 5221 (CEI 40)

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 60506, Piers 6 and 7, were found to generally be in good condition with no defects of structural significance. A moderate to heavy accumulation of timber debris was encountered on the channel bottom at both columns of Pier 7. A light accumulation of timber debris was observed at the upstream nose of Pier 6. The channel bottom appeared stable with no significant scour or appreciable changes since the previous inspection.

INSPECTION FINDINGS:

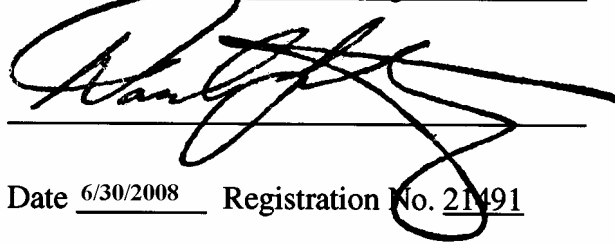
- (A) A moderate to heavy accumulation of timber debris, consisting of 1 to 2 foot diameter logs, was observed around the entire perimeter of the upstream column of Pier 7 and extended from the channel bottom up to 1 foot above the waterline and approximately 8 feet off the column faces.
- (B) A moderate accumulation of timber debris, consisting of 1 foot diameter and smaller logs and branches, was observed around the entire perimeter of the downstream column of Pier 7 and extended from the channel bottom up 6 feet and up to 6 feet off the column faces.
- (C) A light accumulation of timber debris, consisting of 6 inch diameter branches, was observed at the upstream end of Pier 6 and extended from the channel bottom to the waterline. Accumulation was 10 feet long (E/W) and 3 feet wide (N/S).

RECOMMENDATIONS:

- (A) Remove the accumulations of timber debris from around Pier 7 during routine maintenance.
- (B) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Daniel G. Stromberg

A large, stylized handwritten signature in black ink, appearing to read 'Dan G. Stromberg', is written over a horizontal line.

Date 6/30/2008 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.

A large, stylized handwritten signature in black ink, appearing to read 'Dan G. Stromberg', is written over a horizontal line.

Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 60506

Feature Crossed: Red River of the North

Feature Carried: MSAS No. 113

Location: District 2 - Polk County, City of East Grand Forks

Bridge Description: The bridge superstructure consists of thirteen spans of multiple steel girders. The superstructure is supported by two reinforced concrete abutments, three reinforced concrete piers, and nine steel bent piers. The abutments and piers are supported by reinforced concrete footings founded on steel H-piles. The piers are numbered starting from the west end of the bridge.

2. INSPECTION DATA

Professional Engineer/Team Leader: Bradley A. Syler, P.E., S.E.

Dive Team: John J. Loftus, Valerie Roustan

Date: August 19, 2007

Weather Conditions: Cloudy, 65° F

Underwater Visibility: 0.5 feet

Waterway Velocity: 0.5 f.p.s

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 6 and 7

General Shape: The piers consist of two elongated octagonal reinforced concrete columns supporting a rectangular concrete pier cap with rounded or pointed ends. The columns are connected by a concrete diaphragm and two horizontal cross-beams. The columns are supported by separate rectangular footings which are founded on steel H-piles.

Maximum Water Depth at Substructure Inspected: Approximately 18.4 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the pier cap at the upstream end of Pier 7.

Water Surface: The waterline was approximately 37.7 feet below reference.
Waterline Elevation = 795.7.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 7

Item 61: Channel and Channel Protection: Code 5

Item 92B: Underwater Inspection: Code B/08/07

Item 113: Scour Critical Bridges: Code F/02

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

 Yes X No



Photograph 1. Overall View of the Structure, Looking South.



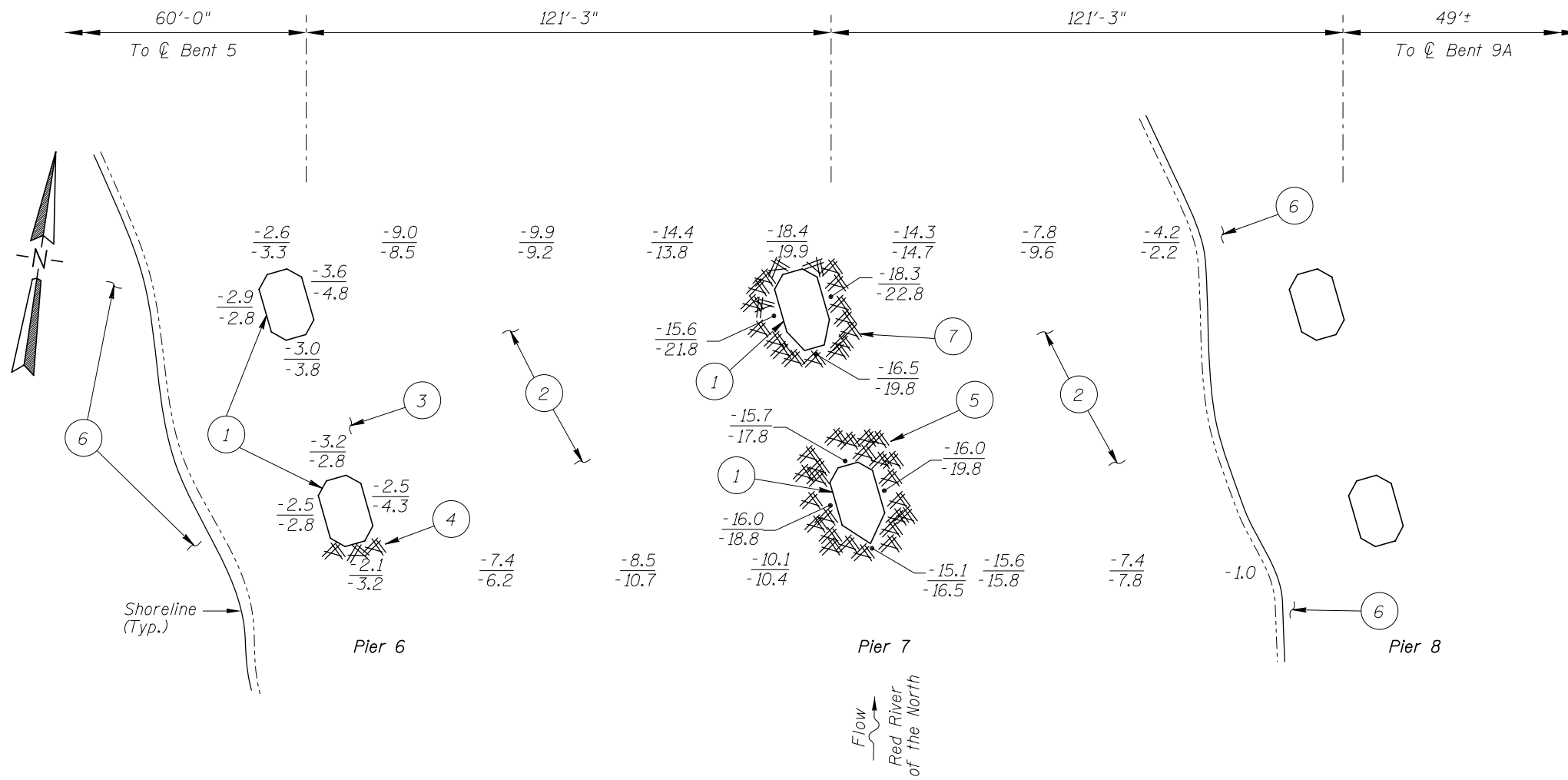
Photograph 2. View of Pier 6, Looking Northwest.



Photograph 3. View of Pier 7, Looking Southwest.



Photograph 4. View of Pier 8 and East Embankment, Looking Southeast.



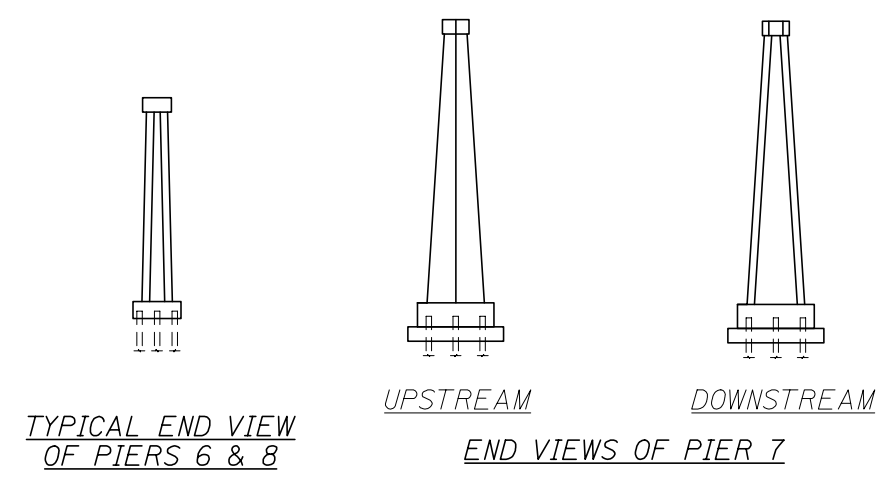
SOUNDING PLAN

GENERAL NOTES:

1. Piers 6 and 7 were inspected underwater.
2. At the time of inspection on August 19, 2007, the waterline was located approximately 37.7 feet below the top of the pier cap at the upstream end of Pier 7. This corresponds with a waterline elevation of 795.7 based on the previous report dated October 28, 2002.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

INSPECTION NOTES:

- 1 Overall, the concrete of the piers was sound and smooth.
- 2 The channel bottom consisted of sandy clay with a probe rod penetration of up to 6 inches.
- 3 The channel bottom consisted of sandy silt with up to 1 foot of probe rod penetration.
- 4 A light accumulation of timber debris, consisting of 6 inch diameter branches, was observed at the upstream end of Pier 6 and extended from the channel bottom to the waterline. The accumulation was 10 feet long (E-W) and 3 feet wide (N-S).
- 5 A moderate to heavy accumulation of timber debris, consisting of 1 to 2 foot diameter logs, was observed around the entire perimeter of upstream column of Pier 7. The debris extended from channel bottom up to 1 foot above waterline and approximately 8 feet out away from the pier column faces.
- 6 Both riverbanks of the channel exhibited moderate erosion.
- 7 A moderate accumulation of timber debris consisting of 1 foot diameter and smaller logs and branches was observed around the entire perimeter of downstream column of Pier 7. The debris extended from channel bottom up 6 feet and up to 6 feet off the column faces.



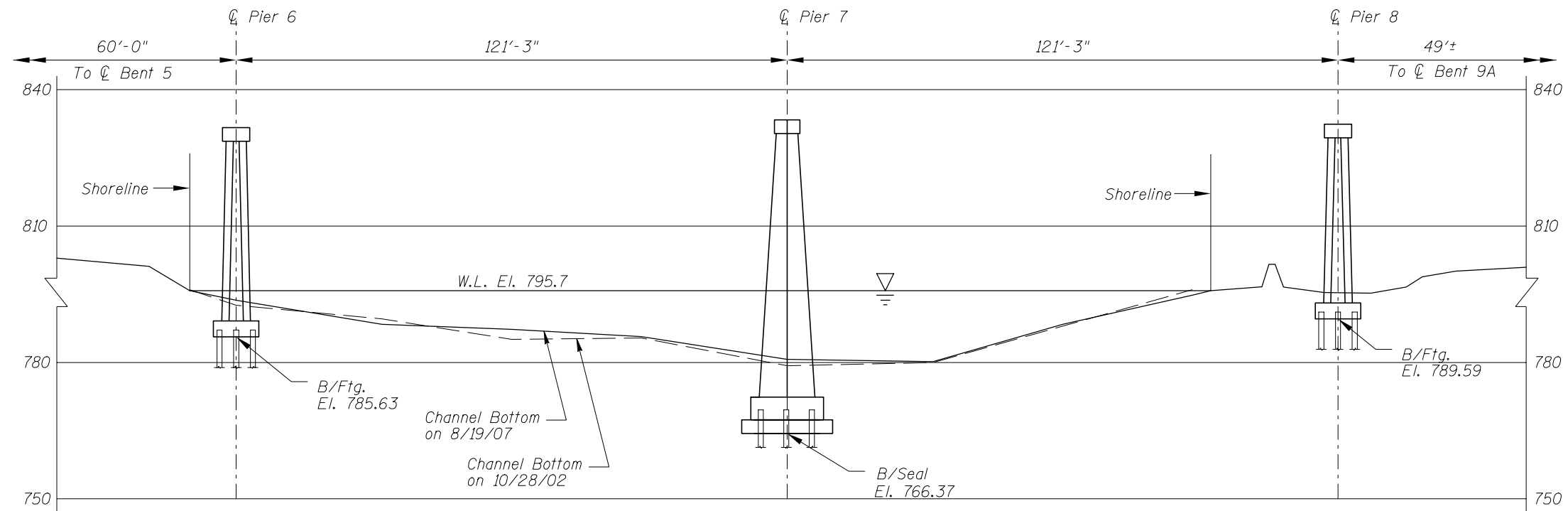
Legend

-2.0 Sounding Depth (8/19/07)
-5.2 Sounding Depth (10/28/02)

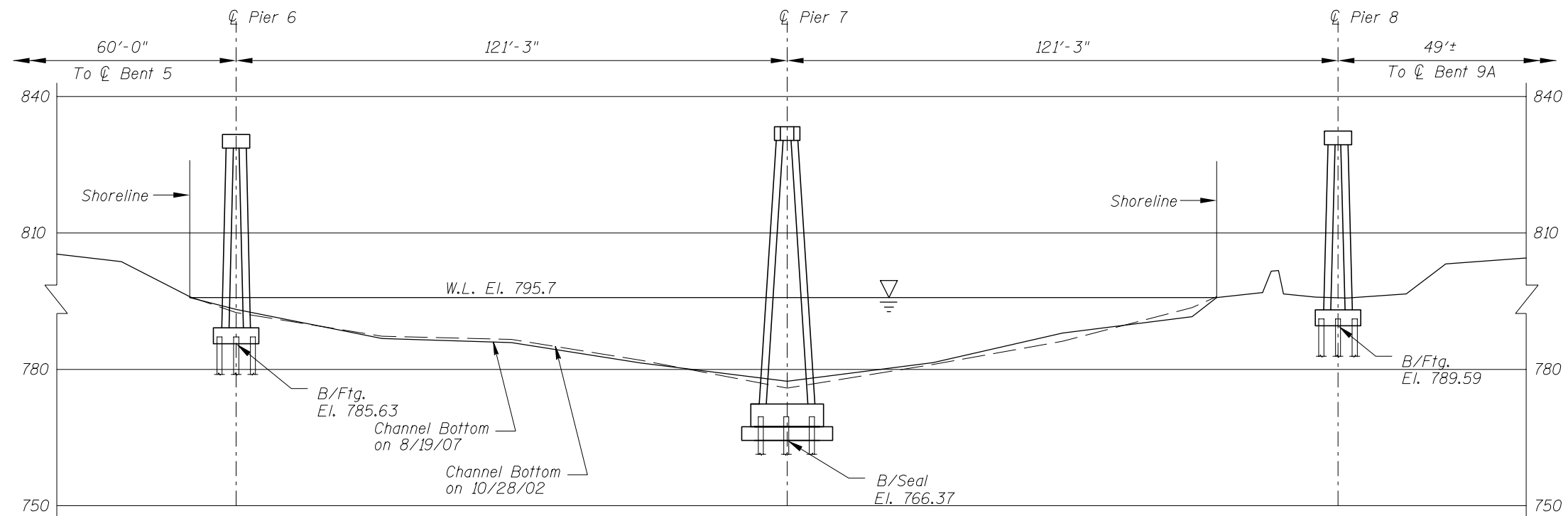
Timber Debris

Note:
All soundings based on 2007 waterline location.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 60506 OVER THE RED RIVER OF THE NORTH DISTRICT 2, POLK COUNTY, CITY OF EAST GRAND FORKS		
INSPECTION AND SOUNDING PLAN		
Drawn By: PRH	COLLINS ENGINEERS	Date: AUGUST, 2007
Checked By: MDK		Scale: NTS
Code: 52210040		Figure No.: I



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:
Refer to Figure 1 for General Notes.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 60506 OVER THE RED RIVER OF THE NORTH DISTRICT 2, POLK COUNTY, CITY OF EAST GRAND FORKS		
UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: PRH	COLLINS ENGINEERS <small>123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: AUGUST, 2007
Checked By: MDK		Scale: 1"=30'
Code: 52210040		Figure No.: 2

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: August 19, 2007

ON-SITE TEAM LEADER: Bradley A. Syler, P.E., S.E.

BRIDGE NO: 60506 WEATHER: Cloudy, 65° F

WATERWAY CROSSED: Red River of the North

DIVING OPERATION: X SCUBA SURFACE SUPPLIED AIR
 OTHER

PERSONNEL: John J. Loftus, Valerie Roustan

EQUIPMENT: Scuba, Probe Rod, Lead Line, Sounding Pole, U/W Light, Fathometer,
Scraper, Camera

TIME IN WATER: 3:00 p.m.

TIME OUT OF WATER: 3:45 p.m.

WATERWAY DATA: VELOCITY 0.5 f.p.s

VISIBILITY 0.5 feet

DEPTH 18.4 feet maximum at Pier 7

ELEMENTS INSPECTED: Piers 6 and 7

REMARKS: Overall, the concrete of the piers was smooth and sound. Moderate to heavy accumulations of timber debris were encountered around the entire perimeter of the upstream and downstream columns of Pier 7, extending from the channel bottom to above water at the upstream column. A light accumulation of timber debris was also present upstream end of Pier 6, extending from the channel bottom to the waterline. Overall, the channel appeared stable with no significant scour or appreciable changes since the last inspection.

FURTHER ACTION NEEDED: X YES NO

Remove the accumulations of timber debris from around Pier 7 during routine maintenance.

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 60506
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Bradley A. Syler, P.E., S.E.
WATERWAY CROSSED Red River of the North

INSPECTION DATE August 19, 2007
NOTE: USE ALL APPLICABLE CONDITION
DEFINITIONS AS DEFINED IN THE MINNESOTA
RECORDING AND CODING GUIDE INCLUDING
GENERAL, SUBSTRUCTURE, CHANNEL AND
PROTECTION, AND CULVERTS AND WALL
DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

UNIT REFERENCE NO.	UNIT DESCRIPTION	MAXIMUM DEPTH OF WATER	SUBSTRUCTURE						CHANNEL					GENERAL					
			PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 6	3.6'	N	7	N	9	N	7	7	6	6	7	6	7	N	N	N	N	N
	Pier 7	18.4'	N	7	N	9	N	7	7	6	6	5	5	7	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the concrete of the piers was smooth and sound. Moderate to heavy accumulations of timber debris were encountered around the entire perimeter of the upstream and downstream columns of Pier 7, extending from the channel bottom to above water at the upstream column. A light accumulation of timber debris was also present upstream end of Pier 6, extending from the channel bottom to the waterline. Overall, the channel appeared stable with no significant scour or appreciable changes since the last inspection.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.